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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,796	12/04/2003	Chris Boyer	LYNN/0177	8892
24945	7590	08/31/2007		
STREETS & STEELE 13831 NORTHWEST FREEWAY SUITE 355 HOUSTON, TX 77040			EXAMINER LEE, CYNTHIA K	
			ART UNIT 1745	PAPER NUMBER
			MAIL DATE 08/31/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/727,796

Applicant(s)

BOYER ET AL.

Examiner

Cynthia Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 12-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment***

This Office Action is responsive to the amendment filed on 5/8/2007. Claims 1-19 are pending. Claims 12-19 are withdrawn from further consideration as being drawn to a non-elected invention. Applicant's arguments have been considered, but are not persuasive. Claims 1-11 are finally rejected for reasons of record.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumeta et al. (U.S. Patent Number 4,615,107).

Kumeta et al. disclose a method for assembling a fuel cell stack comprising the steps of alternately stacking the number of fuel cells and bipolar plates to form a plurality of sub-stacks (abstract). Kumeta et al. disclose that the fuel cell stack comprises a plurality of fuel cells, a plurality of bipolar plates, cooling plates arranged every several fuel cells, and means for tying up, or securing, the fuel cell stack (column 2, lines 44-50). Kumeta et al. disclose a first and second stack secured together as seen in Figure 3. Kumeta et al. disclose testing each of the sub-stacks to examine its assemblage and see if its suitable or not (column 3, lines 2-5). Kumeta et al. disclose using a pair of crossed tie bars and tie rods (column 2, line 51) that include holes for securing, which are

considered perimeter tabs of a first and second component of the sub stack. The sub-stack is tied up, or banded, using these tie bars and tie rods as seen in Figure 1, securing the sub-stack together. It is inherent that the because each of these sub-stacks is making up a fuel cell, that they contain membrane electrode assemblies and include an ionically conducting medium.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumeta et al. (U.S. Patent Number 4,615,107) in view of Mease (U.S. Patent Number 6,358,641 B1).

The disclosure of Kumeta et al. as applied to claim 2 discussed above are incorporated herein. With respect to claim 7, Kumeta et al. disclose using a pair of crossed tie bars and tie rods (column 2, line 51), that include holes for securing, which are considered perimeter tabs of a first and second component of the sub stack. The sub-stack is tied up, or banded, using these tie bars and tie rods as seen in Figure 1, securing the sub-stack together. Kumeta et al. do not disclose leak-testing the sub-stack.

Mease teaches that each plate module may be leakage tested (column 2, line 67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a leakage test to the series of tests already done in the sub-stack of Kumeta et al. to ensure that the sub-stack would function properly before assemblage to the final stack.

5. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumeta et al. (U.S. Patent Number 4,615,107) in view of Ernst et al. (U.S. Patent Number 5,945,232).

The disclosure of Kumeta et al. as applied to claims 8 and 9 discussed above are incorporated herein. Kumeta et al. do not disclose that the fuel cell uses a solid medium, such as a proton exchange membrane (PEM).

Ernst et al. teach a PEM fuel cell stack that has multiple layers between a first end plate and a second end plate. The multiple layers define multiple fuel cell sub-stacks disposed in parallel (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a proton exchange membrane (PEM) as the solid medium for the fuel cell of Kumeta because using a PEM fuel cells offer many advantages over the conventional means of generating electrical energy. For example: they operate at relatively low temperatures and therefore require little or no warmup time; they are clean (their exhaust is typically water and air); they are efficient;

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and the typical sources of fuel/oxidant (hydrogen, air/oxygen) are in abundant supply (column 1, lines 30-37).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kumeta et al. (U.S. Patent Number 4,615,107) in view of Raiser et al. (U.S. Publication Number 2002/0192521 A1).

The disclosure of Kumeta et al. as applied to claim 2 discussed above are incorporated herein. Kumeta et al. do not disclose testing the sub-stack to measure electrical resistance.

Raiser et al. disclose a fuel cell stack that makes it possible to relate changes in resistance to changes in the quality of electrical isolation and to analyze the reasons for the change in electrical resistance (paragraph 16).

Raiser et al. disclose several reasons for a change in resistance and why testing for it is crucial (paragraphs 17-19). For example, a gradual change in resistance can be associated with a gradual deterioration of the coolant (paragraph 17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a leakage test to the series of tests already done in the sub-stack of Kumeta et al. to ensure that the sub-stack would function properly before assemblage to the final stack.

### ***Response to Arguments***

Applicant's arguments filed 5/8/2007 have been fully considered but they are not persuasive.

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*Applicant asserts that the pair of crossed tie bars and tie rods are not components of the substack because according to claim 1, a first plurality of electrochemical cell components are secured into a first sub-stack and a second plurality of electrochemical cell components are secured into a second substack. Then, the first and second substacks are secured together (emphasis added).* The Examiner notes that this argument is not commensurate in scope with the claim language. The order of the steps recited in claim has not been specified.

*Applicant asserts that Mease deals only with internally manifolded cell, whereas Kumeta deals only with externally manifolded cells, and thus are incompatible references.* In response, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

*Applicant asserts that Raiser is interested in the "resistance between a selected on of said fuel cell and said chassis ground."* The Examiner notes that Raiser still reads on the claimed invention because as recited in claim 4, the resistance is measured "through the substack" (emphasis added), and not between two substacks. Thus, the resistance measurement taken from the fuel cell to the chassis ground would necessarily be taken through individual substacks of the fuel cell to the chassis ground,

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and thus fully meets the limitation of the resistance measured "through the substack" (emphasis added).

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ckl

  
SUSYTSANG-FOSTER  
PRIMARY EXAMINER